



US DEPARTMENT OF DEFENSE

BLAST INJURY RESEARCH PROGRAM COORDINATING OFFICE

Facial, Hearing, and Visual Injuries

Effects of Repetitive Low-Level Blast Exposure on Visual Systems and Ocular Structures

Blast injuries to ocular structures and the visual system, particularly those that may be caused by the primary blast wave, are a significant concern due to the high prevalence of blast injuries seen over the past two decades of conflict in the Middle East. In a paper recently published in *Military Medicine*, sponsored by USAMRMC, USAARL researchers recruited seventeen USMC breacher instructors, assigned to Quantico, Virginia, who were assessed for signs of ocular damage as a result of exposure to repeated blast waves. The results from the study suggest that exposure to repetitive low-level primary blast may have detrimental effects on corneal endothelial cell density, near vertical phoria deviations, and general visual field sensitivity. Findings of the USAARL study highlight the importance of performing threshold perimeter testing in those who have suffered an mTBI or concussion-like events. Despite these findings, all test results in the experimental (cadre) group were within, or slightly lower (worse) than, normative value ranges defined for each test. These findings show that the current levels of blast exposure used in breacher training appear to be safe. However, healthcare providers should consider select ophthalmic tests in those individuals who have been exposed to repetitive blasts.